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U.S. Department of Agriculture

PESTICIDE DATA PROGRAM

Progress Report

Spring 1997

Although the U.S. food supply is one of the safest in the world, public concern still exists about the effects of agricultural pesticides on human health and environmental quality. Chemical residues on food have been of particular interest. Recognizing the need to improve the quality and quantity of information available on chemical residues, the U.S. Department of Agriculture (USDA) proposed the Pesticide Data Program (PDP) as part of its fiscal year 1991 budget. Program operations began in May 1991. PDP provides data on actual pesticide dietary exposure, food consumption, and pesticide usage, which help form the basis to conduct realistic dietary risk assessments and to evaluate pesticide tolerances. PDP is now a critical component of the Food Quality Protection Act (FQPA) of 1996. Title III of the Act directs the Secretary of Agriculture to provide improved pesticide residue data collection, including guidelines for the use of comparable analytical and standardized reporting methods and increased sampling for foods most likely consumed by infants and children.

PDP supports the Environmental Protection Agency's (EPA) risk assessment process in the re-registration of pesticides vital for American agriculture to sustain a safe and abundant food supply. Other Government agencies use the data to respond more quickly and effectively to food safety issues. These data have also been used by USDA's Foreign Agricultural Service, State agencies, and grower groups to support the export of U.S. commodities in a competitive expanding global environment.

Coordination of PDP is multi-departmental with planning, policy, and procedural efforts conducted by USDA, EPA, and the Food and Drug Administration (FDA). USDA signed a Memorandum of Understanding (MOU) with EPA and FDA to provide oversight and direction for PDP through an Executive Steering Committee.

- USDA**
- Collects data on agricultural chemical usage;
 - Collects pesticide residue data through cooperation with 10 participating States;
 - Provides EPA and FDA with data on food consumption;
 - Produces residue and usage data for EPA, FDA, and the public; and
 - Provides pesticide alternative practices.
- EPA**
- Coordinates with USDA on data collection for commodities and pesticides;
 - Receives pesticide residue, food consumption, and usage data from USDA, FDA, State, and private sources to support the pesticide reregistration process; and
 - Conducts dietary risk assessments.
- FDA**
- Shares residue data-recording information, commodity coding systems, and commodity preparation information with USDA; and
 - Collects residue data to enforce EPA-established tolerances and FDA administrative guidelines for food; and conducts total diet surveys.

■ **USDA Structure**

The four USDA agencies involved in PDP activities are the Agricultural Marketing Service (AMS), the Agricultural Research Service (ARS), the Economic Research Service (ERS), and the National Agricultural Statistics Service (NASS). AMS was selected as the lead agency to coordinate, implement, and manage the various facets of the program.

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| AMS | <ul style="list-style-type: none">• Coordinates PDP activities of USDA agencies and cooperating State agencies;• Manages pesticide residue sampling and testing procedures;• Designs and maintains an automated information system for pesticide residue data; and• Publishes annual summaries of residue detections. |
| ARS | <ul style="list-style-type: none">• Conducts nationwide surveys of food intake by individuals; and• Translates data on foods as consumed into forms linked to pesticide residue data. |
| ERS | <ul style="list-style-type: none">• Analyzes NASS and AMS data to determine the impact various regulations and production practices might have on U.S. agricultural production, the Nation's food supply, and consumers; and• Assesses the economic implications of alternative pest control policies and practices on producers, marketers, and consumers. |
| NASS | <ul style="list-style-type: none">• Conducts annual statistically reliable surveys of fruit and vegetable producers on fertilizer and pesticide use, relating to pest management and economic practices;• Publishes annual State-level data on the results of the chemical use surveys, including percent of area receiving fertilizer and pesticides and total amounts applied; and• Provides economic data linked to pesticide use data for ERS. |

■ Program Status

AMS

AMS has published pesticide residue summaries for 1991 through 1995. PDP pesticide monitoring activities is a Federal-State partnership where the 10 participating States; California, Colorado, Florida, Maryland (replacing North Carolina), Michigan, New York, Ohio, Texas, Washington, and Wisconsin, provide support services in collection and testing of commodities for pesticides using uniform national standard operating procedures. Together, these States, and States in their direct marketing network, represent more than half the Nation's population, major agricultural States, and all regions of the country, providing the basis for PDP's statistically reliable sampling rationale in projecting national estimates from the residue data. AMS also signed an agreement with USDA's Grain Inspection, Packers and Stockyards Administration (GIPSA) to collect and analyze grains.

PDP samples are collected close to the point of consumption using a random statistically reliable sampling rationale based on marketplace availability, considering origin of product and time in transit and storage. Samples are prepared for analysis emulating consumer practices. This information, coupled with data gathered on post-harvest application of fungicides and growth regulators, provides a better representation of residues actually found on foods as consumed. Products currently collected in the 1997 Program are: 1) six fresh fruit and vegetable commodities -- pears, potatoes (aldicarb only), sweet potatoes, spinach, tomatoes, and winter squash (October-March); 2) three canned and/or frozen commodities -- green beans, winter squash (April-September), and peaches; 3) juices --apple and orange; 4) one grain commodity--wheat; and 5) whole milk. The soybean survey will resume in August 1997. Program expansion to include wheat, soybeans, and milk required the development of separate sampling systems and pesticide testing profiles for each commodity. In addition, at least 2 years of data have been gathered for 12 other fresh commodities (apples, bananas, broccoli, carrots, celery, grapefruit, grapes, green beans, lettuce, oranges, peaches, and potatoes) and two processed commodities (canned and frozen sweet corn and peas). To date, 27 commodities have been included in PDP's testing profile.

PDP continues to amend the commodities tested to further meet EPA's risk assessment needs and respond more fully to the National Academy of Sciences (NAS) report "Pesticides in the Diets of Infants and Children." All PDP commodities for 1997, with the exception of sweet potatoes and spinach, are considered to be high-consumption foods among infants and/or children.

Samples of fresh fruits and vegetables are generally collected at locations such as terminal markets and large chain store distribution centers, while processed vegetable samples are available only at distribution centers. The wheat samples are chosen from GIPSA's file samples, which are collected from grain elevators throughout the Nation. Wheat samples selected for PDP represent all seven types of wheat, but exclude any product intended for export. Sample collection of milk is based on fluid milk production in the 10 participating States, as well as the annual production of each processing plant. Another critical aspect of PDP is the ability to generate comparative data between fresh and processed products, sometimes representing different markets.

Laboratory operations are designed to detect, verify, and report low-level pesticide concentrations. Participating testing facilities use advanced technologies, uniform laboratory procedures, and an effective quality assurance program based on EPA's Good Laboratory Practices. Laboratories verify residue detections and participate in PDP's Check Sample Program. Periodic audits of sampling and laboratory operations are conducted to ensure compliance with PDP Standard Operating Procedures.

State laboratories and GIPSA perform analyses for organochlorine, organophosphate, organonitrogen, organosulfur, and N-methyl carbamate classes of pesticides. Depending upon the commodity, specific analyses for 2,4-D, abamectin, benomyl, formetanate, and hexakis are performed by two Federal laboratories (AMS Eastern Laboratory in Gastonia, NC, and APHIS NMRAL Laboratory in Gulfport, MS) and selected State laboratories. The pesticides routinely monitored by PDP are those identified by EPA as needing more refined data for realistic dietary risk assessments. Presently, a total of about 75 pesticides are included in the fruit and vegetables, wheat, and milk testing programs. These pesticides include insecticides, fungicides, herbicides, and growth regulators. Other pesticides and industrial contaminants have been occasionally reported by PDP testing facilities.

The Program designed an extensive, automated database management system, which provides a central repository for the pesticide residue data, where data is electronically transferred from the participating laboratories directly to the PDP database. PDP also has the capability to conduct customized data queries.

ARS

Micro data for 1994 and 1995, the first 2 years of the "Continuing Survey of Food Intakes by Individuals (CSFII) 1994-96," have been released on CD-ROM and magnetic tape. The 2 years of food intake data can be combined for a sample size of approximately 11,000 individuals of all ages. The full 3-year survey, which ended in January 1997, will provide intake data from more than 16,000 individuals.

ERS

ERS has published several reports analyzing results of the Pesticide Data Program, which include: 1) Economic Issues Associated with Food Safety, Food and Consumer Economic Division, Staff Paper Number AGES 9606; 2) Pesticide Residues: Reducing Dietary Risks, Agricultural Economic Report No. 728; 3) "Pesticide Residues and Food Safety" in Agricultural Resources and Environmental Indicators [ARE], Agricultural Handbook No. 705; 4) Pesticide Use and Trends in U.S. Agriculture, Agricultural Economic Report No. 717; 5) Pest Management of Major Field Crops in 1994, AREI No.19, 1995; 6) Organic Vegetable Growers Surveyed in 1994, AREI Update No. 4, 1996; and 7) The Extent of Integrated Pest Management in U.S. Agriculture, Agriculture Information Bulletin No. 707.

NASS

NASS has published several surveys related to PDP activities: 1) Fruits and Nuts Chemical Use Survey in 14 Major Producing States, 1991 crop year; 2) Vegetable Chemical Use Survey in 14 Major Producing States, 1992 crop year; 3) Fruit Chemical Use Survey in 9 Major Producing States, 1993 crop year; 4) Vegetable Chemical Use Survey in 14 Major Producing States, 1994 crop year; and 5) Fruit Chemical Use Survey in 9 Major Producing States for the 1995 crop year. Vegetable Chemical Use Survey in 14 Major Producing States, 1996 crop year, will be published in July 1997.

■ Summary of Pesticide Residue Data for Calendar Year 1995

A total of 7,524 samples were collected and 7,390 samples analyzed in 1995. Fruit and vegetables accounted for 6,890 samples analyzed and wheat 600 samples. Pesticides detected included insecticides, herbicides, fungicides, and growth regulators. Also detected were DDT and its metabolites, although their presence is almost certainly due to environmental contamination, not the result of prohibited crop application. Approximately 65 percent of the fruit and vegetable samples and 79 percent of the wheat samples tested contained at least one pesticide residue. Post-harvest application pesticides accounted for 29 percent of the residue detections. For fruit and vegetables, 69 different pesticide/metabolites were detected and 10 for wheat.

Approximately 83 percent of samples tested were domestic, and 16.5 percent were imported (0.4 percent were of unknown origin). Of all samples tested, 3.8 percent were reported as presumptive tolerance violations. Most of these were for residues where no tolerance was established and no violations were reported in wheat.

Residues of pesticides when found on the tested foods are generally well below the level of established tolerances. This is to be expected because of the dissipation of residues between the farm and the market place and the standard food preparation techniques applied prior to testing.

■ Program Synopsis

PDP supports EPA's dietary risk assessment studies by providing quality data that meet statistically reliable limits of detection and verification criteria. PDP has: 1) promptly responded to requests from EPA for specific residue data; 2) altered the residue testing profile and pesticide use surveys to meet the needs of EPA as requested, especially for compounds that require more refined data; 3) added processed fruits and vegetables, grain, and dairy commodities; 4) responded to issues confronting the Government that involve the quality and scope of pesticide residue data as stated in FQPA; 5) modified its information system to meet the varying needs of data users; and 6) supports the export of U.S. commodities in a competitive global market. USDA is confident this program is generating the data necessary for making decisions on food safety issues and addressing public perceptions concerning the safety of the Nation's food supply.

■ For More Information

For more information on the Pesticide Data Program, contact William J. Franks, Jr., Director, AMS Science and Technology Division, at (202) 720-5231; or Robert L. Epstein, Deputy Director, at (202) 720-2158, or by facsimile at (202) 720-6496. For more copies of the Progress Report or the PDP summaries, contact PDP staff at (703) 330-2300, or by facsimile at (703) 330-6110. Messages may be sent electronically to: 1) William_J_Franks@usda.gov; or 2) Robert_L_Epstein@usda.gov.



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